

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 664499	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, Item 5 below.	
International application No. PCT/JP2004/007535	International filing date (day/month/year) 26/05/2004	(Earliest) Priority Date (day/month/year) 26/05/2003
Applicant  MATSUSHITA ELECTRIC WORKS., LTD.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this Item.

☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (See Box II).

3. ☐ **Unity of invention is lacking** (see Box III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 2

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

- b. ☐ none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/007535

## Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A light-emitting device (200) has a submount (100) and a plate for heat transfer (300) having a metallic plate (30). The submount (100) has a mount base (10), at least one light-emitting diode chip (5) mounted thereon and electrically conducting lines (12-17) formed on the mount base (10) to be connected electrically to the light-emitting diode chip (5). A first plane (11) of the mount base (10) of the submount (100) is bonded thermally to the first plate (300). For example, the plate is a circuit board having a metallic plate (30), and the submount (100) is bonded thermally to the metallic plate (30) of the one of the at least one plate (300). In an example, a second plate for heat transfer is also bonded thermally to a second plane of the mount base (100) for providing a plurality of heat transfer paths.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP2004/007535

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H01L33/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 498 355 B1 (HARRAH SHANE ET AL) 24 December 2002 (2002-12-24)	1,2,5, 8-10
Y	column 2, line 49 - column 5, line 39; figure 2	3,4,6,7, 11-14, 21,25-27
A		15-20, 22-24
Y	US 5 172 301 A (SCHNEIDER MARK R) 15 December 1992 (1992-12-15)	3,4,6,7, 26,27
A	column 2, line 62 - column 5, line 2; figures 2-6	1,2,5, 8-25
	----- -/-- -----	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the international search

3 November 2004

Date of mailing of the international search report

12/11/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Krause, J

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/JP2004/007535

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PATENT ABSTRACTS OF JAPAN vol. 008, no. 049 (E-230), 6 March 1984 (1984-03-06) -& JP 58 201383 A (FUJITSU KK), 24 November 1983 (1983-11-24)	11-14
A	abstract	1,2, 15-20
Y	----- PATENT ABSTRACTS OF JAPAN vol. 016, no. 236 (E-1210), 29 May 1992 (1992-05-29) -& JP 04 048740 A (MATSUSHITA ELECTRIC IND CO LTD), 18 February 1992 (1992-02-18)	21,25
A	abstract	1,2, 22-24
A	----- EP 1 139 439 A (RELUME CORP) 4 October 2001 (2001-10-04) paragraph '0016! - paragraph '0031!; figure 2	1-27
A	----- US 6 501 103 B1 (HSING CHEN CHEN-LUN ET AL) 31 December 2002 (2002-12-31) column 1, line 61 - column 2, line 34; figure 3	1-27
A	----- US 6 159 764 A (BROOKS JERRY M ET AL) 12 December 2000 (2000-12-12) column 4, line 51 - column 8, line 63; figures 1A-1C	1-27
A	----- EP 0 836 227 A (HEWLETT PACKARD CO) 15 April 1998 (1998-04-15) column 5, line 37 - column 7, line 3; figures 5,6	1-27
	-----	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP2004/007535

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6498355	B1	24-12-2002	DE 10246892 A1 JP 2003124524 A TW 561635 B	24-04-2003 25-04-2003 11-11-2003
US 5172301	A	15-12-1992	JP 5206338 A	13-08-1993
JP 58201383	A	24-11-1983	NONE	
JP 04048740	A	18-02-1992	JP 2745786 B2	28-04-1998
EP 1139439	A	04-10-2001	CA 2342267 A1 EP 1139439 A1 US 2001030866 A1	30-09-2001 04-10-2001 18-10-2001
US 6501103	B1	31-12-2002	DE 20117987 U1	14-02-2002
US 6159764	A	12-12-2000	US 2003077853 A1 US 6506629 B1	24-04-2003 14-01-2003
EP 0836227	A	15-04-1998	US 5825625 A CN 1180856 A , B EP 0836227 A2 JP 10125832 A SG 72730 A1	20-10-1998 06-05-1998 15-04-1998 15-05-1998 23-05-2000